

What is Claimed is:

1. A light projection system for projecting an image comprising a matrix of light pixels having modulated luminance, the projection system comprising:

a first imager configured to modulate a light band on a pixel-by-pixel basis

5 proportional to gray scale values provided for each pixel of the image to produce a first output matrix;

a second imager positioned and configured to receive the first output matrix of modulated pixels of light and modulate the individual modulated pixels of light from said first imager on a pixel-by-pixel basis proportional to a second gray scale value provided for each

10 pixel of said image to produce a second output matrix;

a relay lens system for projecting the first output matrix from the first imager onto the second imager; and

a projection lens system for projecting the second output matrix onto a screen;

15 wherein the first imager, the second imager, the relay lens system, and the projection lens system are configured to provide a speed of at least about $f/2.0$.

2. The light projection system of claim 1 wherein the relay lens system is symmetrical.

3. The light projection system of claim 2 wherein the relay lens system comprises a system stop having two acromatic lenses adjacent the system stop and a acrylic asymmetric lens at the beginning and the end of the relay lens system.

20 4. The light projection system of claim 1 wherein the relay lens system projects greater than 60 percent of the energy from a particular pixel within a square having a 9 micron half width.

5. The light projection system of claim 1 wherein the projection lens system comprises, sequentially, an acrylic asymmetric lens, first and second acromatic lenses, a system stop, a third acromatic lens and a second acrylic asymmetric lens.

6. The light projection system of claim 5 wherein the first, second, and third acromatic lenses each have at least one asymmetric surface.

7. The light projection system of claim 6 wherein the first and second acromatic lenses each have three asymmetric surfaces.

8. The light projection system of claim 1 wherein both said first imager and said second imager are Liquid Crystal on Silicon (LCOS) imagers.

9. The light projection system of claim 8 further comprising at least one polarizing beam splitter, wherein said first imager is an LCOS imager and said polarizing beam splitter provides polarized light to said first imager.

10. An image projection system comprising a first imager and a second imager, each of said first and second imagers comprising a corresponding matrix of pixels configured to provide a light output modulated proportional to a gray scale value provided for each pixel, said projection system being configured such that a modulated output from a particular pixel of said first imager is projected onto a corresponding pixel of said second imager by a relay lens system; whereby the light output of a particular pixel of said second imager is proportional to both the gray scale value provided for that pixel and the gray scale value provided for the corresponding pixel of said first imager, the output of said second imager being projected onto a screen by a projection lens system, wherein the said image projection system is configured to have a speed of at least $f/2.0$.

11. The image projection system of claim 10 wherein the contrast ratio of the image projection system is greater than the contrast ratio of either the first imager or the second imager, individually.

12. The image projection system of claim 11 wherein the relay lens system is symmetrical.

13. The image projection system of claim 12 wherein the relay lens system comprises a system stop having two acromatic lenses adjacent the system stop and a acrylic
5 asymmetric lens at the beginning and the end of the relay lens system.

14. The image projection system of claim 11 wherein the relay lens system projects greater than 60 percent of the energy from a particular pixel within a square having a
9 micron half width.

15. The image projection system of claim 11 wherein the projection lens system
10 comprises, sequentially, an acrylic asymmetric lens, first and second acromatic lenses, a system stop, a third acromatic lens and a second acrylic asymmetric lens.

16. The image projection system of claim 15 wherein the first, second, and third acromatic lenses each have at least one asymmetric surface.

17. The image projection system of claim 16 wherein the first and second
15 acromatic lenses each have three asymmetric surfaces.

18. The image projection system of claim 11 wherein both said first imager and said second imager are Liquid Crystal on Silicon (LCOS) imagers.